REMARKS

The interview conducted October 22, 2003, is acknowledged. A separate record of the substance of the interview is included in the following remarks.

Claim 7 is rewritten above in independent form. All other claims of this application are canceled.

As discussed during the interview, newly cited international publication WO 01/96111 to Dyke is effective as a reference in the United States as of its June 8, 2001, international filing date. This June 8, 2001 filing date is after the October 13, 2000 filing date of prior German application 100 50 851.0, the priority of which is claimed in the present U.S. application. A certified English translation of prior German application 100 50 851.0 is submitted together with this Amendment, and withdrawal of the rejection of claim 7 is in order.

The Examiner's comment that claim 7 "could/would" be rejected in a subsequent action is noted. It is presumed that any such rejection of claim 7 would be made in a non-final office action.

Reconsideration of the rejection under 35 U.S.C. §112, second paragraph, is requested. As noted during the interview, the predetermined shapes of the polymer layers ensure bonding in overlapping areas of inner cut semi-finished product sections, designated, for example, 10a and 10b in Figure 4 and 22-24 in Figure 5a, and cut semi-finished product sections, designated, for example, 10c and 10d in Figure 4 and 21, 25 in Figure 5a,

that form outer sides of a preform. The overlapping areas referred to are co-extensive with the bonded fabric overlapping areas 38a, designated in Figure 4, and 38b, designated in Figure 5a. Attention is directed to paragraphs 0040-0044, for example, of the specification, and again to Figures 4 and 5a. The language previously used in claim 1 and now used in currently amended claim 7 is accurate, and the rejection under 35 U.S.C. §112, second paragraph, should be withdrawn.

Entry of this Amendment and reconsideration of this application are requested. Should the Examiner have any questions after considering this Amendment, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,

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Richard R. Diefendorf
Registration No. 32,390

CROWELL & MORING LLP
P.O. Box 14300
Washington, D.C. 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
RRD:msy

STI

CERTIFICATION

Schreiber Translations, Inc.

51 Monroe Street

Suite 101

Rockville, MD 20850

P: 301.424.7737

F: 301.424.2336

This is to certify that the attached English language document, identified as Method for Producing Preforms from Fiber Composites as well as Preform Produced with this Method, is a true and accurate translation of the original German language application 100 50 851.0, filed October 13, 2000, to the best of our knowledge and belief.

Executed this 29th day
of October, 2003

Director of Translation Services
Schreiber Translations, Inc.
51 Monroe Street, Suite 101
Rockville, Maryland 20850
ATA Member 212207

translation@schreibernet.com

www.schreibernet.com

P 609607

Method for Producing Preforms from Fiber Composites as well as Preform Produced with this Method

The invention relates to a method for producing preforms from fiber composite semi-finished products as well as to a preform produced with such a method.

Depending on their composition, fiber-reinforced polymers (FRP) are described as carbon- fiber reinforced plastic (CFRP), glass fiber reinforced plastic (GFRP), aramide fiber reinforced plastic (AFRP) or boron fiber reinforced polymers (BFRP). Hybrid materials (i.e. a mixture of these materials such as CFRP tissue with AFRP rovings woven in or similar) can be used as well. The fibrous components, called fibers in the following, of these fiber composite semi-finished products are formed by carbon fibers, glass fibers, aramide and/or boron fibers. They can have the design of e.g. tissue, multi-axial bonded fabrics or unidirectional chain-reinforced semi-finished products. Suitable polymers are for example all epoxy prepreg polymers.

In the production of fiber reinforced polymer components, the conventional state of the art uses textile semi-finished products as the starting materials, which are formed by at least one bonded fabric, tissue or knitted fabric, i.e. in general a textile flexible sheet material. The textile semi-finished products are placed in a device that represents a negative mold of the component that is supposed to be produced, wherein these products already contain polymers or to which polymers are applied in the device. After a curing process, the cured material can then be removed from the device as a component.

One disadvantage of this method is that the individual layers must be soaked individually with the polymer, and that the operators have to handle liquid materials (polymer) that are dangerous to their health. Additionally, the liquid polymer quantity that must be added depending on the method that is used, e.g. manually with a brush or through a soaking device, can vary drastically from component to component and method so that a consistent quality of the respectively obtained result cannot always be guaranteed with certainty.

Furthermore methods exist from the conventional state of the art based on which preforms are formed from several pieces and/or partial pieces of fiber composite semi-finished products before the fiber composite semi-finished product is finally treated with polymer. Preforms represent preliminary stages of the component that is supposed to be produced, while exhibiting already the shape of the latter. They can be formed for components with a geometry that can be unwound, one that cannot be unwound or one that cannot be unwound completely. A component's property is described as unwindable or non-unwindable if it can or cannot be wound on a reel and then unwound again. Various methods are known for the production of such preforms:

With the so-called bonding technique dry fiber composite semi-finished products are mixed with bonding agents, i.e. generally with bonding agents in the form of powder, and then assembled as bundles. In this composition they are set for example through an appropriate warming process. Complex components are shaped manually or with the help of rubber membranes. The bonding technique has the disadvantage that the fiber composite semi-finished products must be specially prepared and that the material containing the bonding agents - comparable to the prepregs - must be stored in a cool place. Additionally, the bonding agents must be prepared specially and be qualified. They cannot lead to undesirable side effects with the polymers that are used later on: This is problematic because a suitable bonding agent variation is not available for every common polymer system. In these cases systems with bonding agents suffer with regard to their mechanical properties compared to the same fibrous material without bonding agents.

In another method the dry fiber composite semi-finished products can be sewn together in a desired composition. All conventional sewing techniques, including tufting, crocheting or knitting, can be used. This method has the disadvantage that complex auxiliary tools are required especially for spatial sewing processes, with the complexity of these tools requiring a frequent change in the mounting process or to the device and thus increase the proneness to defects. Additionally, the preparations required for sewing processes and the sewing processes as such are very labor and time intensive and therefore also cost intensive.

The invention is based on the task of making an improved method for producing preforms from fiber composite semi-finished

products as well as a preform produced with this method available.

The task is resolved with the features of the independent patent claims. Further embodiments are included in the respective sub-claims.

Compared to the state of the art the invention offers the advantage that neither special preparations of the fiber composite semi-finished products with bonding agents nor a sewing process with the resulting efforts are required.

Another advantage of the object of the invention is the fact that the raw materials, polymer layer and fibrous material, are not joined until the preform is being produced and thus the complex storage process at cool temperatures is eliminated. The polymer quantity that is introduced is added by incorporating a certain number of layers of the polymer coating with the appropriate surface weight in g/m^3 in a clearly reproducible manner. Similarly, the invention can also applied for polymer systems that are not suited for the bonding technique, e.g. when epoxy polymer systems are used as polymer coating semi-finished products.

The invention is explained in the following based on the attached drawing, which shows:

Fig. 1 a diagrammatic depiction of a cut semi-finished product section in a perspective visualization, with the cut section being planned to serve as the starting material for the invented method,

Fig. 2 a diagrammatic depiction of a cut polymer coating section in a perspective visualization, with the cut section being planned as another starting material for the invented method,

Fig. 3 a diagrammatic cross-sectional depiction of a bonded fabric made of several layers of cut semi-finished product sections alternating with layers of polymer, with this fabric being arranged on a working surface in order to be able to mold a preform of a specified shape in the subsequent procedures,

Fig. 4 a diagrammatic cross-sectional depiction of an alternative design of a bonded fabric pursuant to Figure 3, which is positioned on a curing tool and contains a local polymer layer recess, wherein in an additional step compared to

the state of the bonded fabric pursuant to Figure 3 an area of an accordingly protruding cut semi-finished production section is draped on an appropriate edge surface so as to form a base of a preform,

Fig. 5a a cross-sectional depiction of a first procedural step for forming a preform with a profile that contains a reinforcement rib and on either side of this rib contains base layers A and B extending from it to connect a follow- or sub-structure, wherein a bonded fabric made of layers of cut semi-finished product and polymer coating sections is positioned on a working surface,

Fig. 5b a depiction of a bonded fabric pursuant to Figure 5a based on another procedural step, wherein the accordingly protruding layers have been draped to an appropriate edge so as to form the reinforcement rib of the preform,

Fig. 5c a depiction of a bonded fabric pursuant to Figure 5a and/or 5b based on another procedural step, wherein accordingly protruding layers have been draped so as to form the base layers.

The invented method is used to produce a bonded fabric out of at least two layers of a dry fiber composite semi-finished product and at least one layer of polymer, which are placed on top of each initially as separate components in such a way that the resulting bonded fabric can be used to mold the preform 1 of a specified shape in a draping process. The preform can also be a pre-preform in general, i.e. an intermediate product used to produce a preform.

In detail, in the invented production method for manufacturing preforms 1, layers of a prefabricated, dry fiber composite semi-finished product and polymer layers are placed on top of each other on a working surface 60, wherein the polymer layers ensure the bonding of those sides of the cut semi-finished product sections that face each other in overlapping areas as long as they don't represent any exterior sides of the subsequent preform. Thus the polymer layers have a shape that ensures the bonding of interior cut semi-finished product sections as well as of those sides of the cut semi-finished product sections forming the exterior sides of the preform that face each other in the overlapping areas. The polymer layers contain local recesses in order to minimize shearing stress in the area of the local recesses when forming the individual molded parts (A, B, C, D) of the bonded fabric. Fig. 3 for

example shows such a bonded fabric, which contains the bonded fabric layers 3a, 3b, 3c, 3d, 3e, 3f.

The preform in general is formed by several parts, which usually each contain a different number of semi-finished layers and/or polymer layers, resulting from the respective shape of the dry cut semi-finished product sections and the polymer layers. These parts can be arranged at an angle to each other. Also, protruding areas of individual bonded fabric layers can be angled by another area so as to form reinforcement segments, base layers, flanges or similar with these protruding areas. Generally it is necessary that the exterior sides of the individual areas be formed by the appropriate areas of the cut semi-finished product sections, i.e. that the polymer layers are located in the areas between the outer semi-finished product layers.

In order to form the preform into a specified shape by molding the bonded fabric, which consists of the semi-finished product layers and the polymer coatings, the polymer layers, which are provided for the purpose of bonding the sides of the cut semi-finished product sections that face each other in the sides' overlapping areas, are equipped with local recesses there in order to enable the appropriate parts A, B, C, D of the bonded fabric to become angled or allow them to move.

In order to form such a bonded fabric 3, according to the invention the required cut semi-finished product sections 10 of dry fiber composite semi-finished products, i.e. those that do not contain polymer or adhesive, are cut to size individually based on an appropriate design specification. The individual cut semi-finished product sections 10 can be cut from an unwound semi-finished product reel 20 (Fig. 1). The cutting process occurs for example on an even surface or a cutter table. The cut semi-finished product sections 10 can be marked initially and then be cut manually with a knife or with a machine.

The polymer, which is provided between the semi-finished product layers so as to form the bonded fabric 3, is introduced between the layers of cut semi-finished product sections in the form of a polymer coating when placing these section layers on top of each other or it is introduced between them. In another procedural step, the bonded fabric 3 is changed into the shape of the preform 1 that is supposed to be produced through a draping process. The bonded fabric 3 can be positioned on an appropriate curing tool 70, which contains suitable edges or resting surfaces in order to support the draping process. In

the subsequent curing step, the preform 1 is cured based on the state of the art. The preform 1 can then be used to form the component that is supposed to be produced.

The polymer coating 30 can also be applied to the planned overlapping area of the semi-finished product (10) before cutting the dry semi-finished product, wherein subsequently the semi-finished product section (10) is cut.

According to the invention, dry cut semi-finished product sections are used, which are alternately stacked with the polymer layers. The polymer layers are preferably formed by polymer coatings, i.e. cut polymer coating sections. The polymer is used to ensure that the individual semi-finished product layers bond with each other. If necessary, it is feasible to provide local recesses of the polymer coating for the forming process. This way the molding properties of the bonded fabric and/or of the preform that is supposed to be produced can be controlled specifically because the dry fiber composite semi-finished products can shift in these areas due to the friction sliding resistance predetermined by the material.

The design specification for forming the cut semi-finished product sections and possibly the cut polymer coating sections is defined in such a way that in a specific arrangement of the cut sections or the bonded fabric layers the formation of the preform 1 that is supposed to be produced is possible and achieved in subsequent procedural steps.

In order to set up the preform 1 that is supposed to be produced, layers of cut semi-finished product sections 10 and polymer layers 30 are placed on top of each other in a specified thickness and shape on a preferably even working surface 60 in a specified sequence so as to form the bonded fabric 3 (see Fig. 3). The working surface 60 is preferably equipped with a separating foil 61, which can serve as a carrier for the preform. The working surface 60 is preferably equipped with a reference system or a reference device, which can be implemented e.g. through a stop 61 or through a foil or through laser pointer dots (the latter two are not shown). Additionally, the working surface 60 itself can be prepared with a polymer layer or a layer of a polymer coating in order to set the bonded fabric 3 and/or the preform 1 while it is being processed.

Initially a first dry cut semi-finished product section 11 is placed on the working surface 60. On the top, i.e. on the side facing away from the working surface 60, as shown above a

polymer layer e.g. in the form of a cut polymer coating section 31 can be applied already before this step. It is also possible, however, to provide such a polymer layer not until after the first cut semi-finished product section 11 has been positioned on the working surface 60. The first method offers the advantage that the carrier paper and/or carrier foil 50 of the cut polymer coating section 30 stabilizes the generally very sensitive dry cut semi-finished product section 10 when placing it on the working surface 60. Of course this aspect is relevant any time you apply a cut polymer coating section 30.

In order to apply a cut polymer coating section 30 onto the respective cut semi-finished product section 10, appropriate cut polymer coating sections 30 are cut from the polymer coating 40 (Fig. 2), which has been applied to at least one side of a carrier paper or a carrier foil 50, and the individual cut polymer coating sections 30 are each positioned on at least one cut semi-finished product section 10. The cut polymer coating sections 30 can correspond completely to the shape and dimension of the cut semi-finished product sections 10. It is also possible, however, that they exhibit a different shape in order to bond only partial areas of the cut semi-finished product sections 10 with each other.

Afterwards, one side each of the cut polymer coating sections 30, on which no carrier paper and/or no carrier foil has been arranged, is brought into contact with the respective cut semi-finished product section 10 in the appropriate position and pressed on so that the cut polymer coating sections 30 adhere to the cut semi-finished product sections 10. They can be pressed on for example with a pressure roller or a vacuum membrane (neither is shown). Alternatively it is also possible to apply the polymer coating 30 first on the cut semi-finished product section 20 and then create the cut semi-finished product sections 10 and the cut polymer coating sections 30 at the same time in one operation.

In a first step in the example of Figure 3 initially a first bonded fabric layer 3a is obtained with a first cut semi-finished product section 11 that is positioned on the working surface 60 with its bottom side and on whose top side a first cut polymer coating section 31 is applied. Another polymer layer 30 can be provided also on the bottom side of the first cut semi-finished product section 11. The first cut polymer coating section 31 can also have a carrier paper or carrier foil 51 on its top side. The layer sequence resulting from this procedural step is therefore as follows, when viewed from the

working surface 60: working surface 60, optionally a separating foil 61 for setting the generated bonded fabric 30, a first cut semi-finished product section 11, a first cut polymer coating section 31 and a first carrier paper or carrier foil 51.

In a subsequent step, the carrier paper or carrier foil 51 is removed and a second cut semi-finished product section 12 is applied. As the first cut semi-finished product section 11, this section 12 can already contain a second or additional cut polymer coating layer 32 or not. In either case the second cut polymer coating section 32 is applied to the side of the second cut semi-finished product section 12 facing away from the first cut semi-finished product section 11. Additionally, another or third cut polymer coating layer 32b can be applied to the bottom side of this cut semi-finished product section 12 (this configuration is not shown in Figure 3). In this case, two layers of cut polymer coating sections 32, 32b are arranged in the area between the first 11 and the second 12 cut semi-finished product sections. Basically it is also feasible to equip all layers of cut semi-finished product sections 10, 11, 12, respectively, with a cut polymer coating section 30 only on the bottom side. Finally, combinations of the described procedures are also feasible.

With this procedure, a bonded fabric 3 of a predetermined bonded fabric thickness is formed from at least one bonded fabric layer 3a, 3b, 3c, 3d, 3e, 3f. Each bonded fabric layer contains a cut semi-finished product section 10 and at least one cut polymer coating layer 30, which is arranged either on the top side, i.e. in relation to the respective cut semi-finished product section on the side located opposite the working surface 60, or on its bottom side or on both sides.

According to the invention it is only important that a cut polymer coating section 30, 31, 32 is also arranged between two cut semi-finished product sections 10, 11, 12 in the respective desired area.

The described arrangement of bonded fabric layers is continued until the desired layer thickness has been reached for the preform that is supposed to be produced. In the example of Figure 3, the bonded fabric layers 3a, 3b, 3c, 3d, 3e, 3f are shown. This way, randomly graduated areas, locally raised areas and belt layers can be generated on preforms. The result is that for example the structure of a preform shown in Fig. 3 consisting of cut semi-finished product sections 10 or 11, 12,

13, 14, 15, 16 and cut polymer coating sections 30 or 31, 32, 33, 34, 35 can be created.

The semi-finished dry fiber composite bonded fabric that has been formed based on one or several of the above-described procedures is then transferred to a suitable curing tool 70 and formed and/or draped (Figures 4 and 5a-c) in stages in all necessary planes. The shape of the bonded fabric 3 as well as the way it is draped and formed on the curing tool 70 is planned in such a way that this allows the shape of the preform that is supposed to be produced to be obtained from the bonded fabric 3. This process is described in the following with the help of a few examples:

As in the example shown in Fig. 4, individual cut semi-finished product sections 10a and 10b protrude from an inner stack area of cut semi-finished product sections 10 or an inner overlapping area 38a. The cut polymer coating sections 10c, 10d however all only contain smaller longitudinally extending sections that are located between these sections and the dimension of the protruding cut semi-finished product sections 15 and 17. Thus, the free ends of the protruding cut semi-finished product sections 10a and 10b can be formed freely. This makes it possible to drape them around an accordingly provided edge 71 of the curing tool 70.

Another embodiment of a fiber composite bonded fabric 3 with bonded fabric layers 4a, 4b, 4c, 4d, 4e and their handling in the production of a preform is shown in Figures 5a-5c. The bonded fabric layer 4a contains a cut semi-finished product section 21, on top of which a cut polymer coating section 41 is located, the bonded fabric layer 4b contains a cut semi-finished product section 22, on top of which a cut polymer coating section 42 is located, the bonded fabric layer 4c contains a cut semi-finished product section 23, the bonded fabric layer 4d contains a cut polymer coating section 44, on top of which a cut semi-finished product section 24 is located, the bonded fabric layer 4e contains a cut polymer coating section 45, on top of which a cut semi-finished product section 25 is located.

In detail, the bonded fabric 3 and/or the preform P in Fig. 5a-5c is set up as follows: on the working surface 60 and/or the curing tool 70 initially a first cut semi-finished product section 21 is located, which in its level dimension corresponds to the surface of an inner overlapping area 38b of the bonded fabric 4. Then, in the direction leading away from the working surface, a cut polymer coating section 21 of the same level

dimension follows as do a second cut semi-finished product section 42 that protrudes beyond the overlapping area 38b on a first side, a second cut polymer coating section 42 whose level dimension is between the dimension of the overlapping area 38b and the level dimension of the second, protruding cut semi-finished product section 22, another cut semi-finished product section 23 whose level dimension corresponds to the surface of the inner overlapping area 38b, another cut polymer coating section 44 with the level dimension of the cut polymer coating section 42, a cut semi-finished product section 24 with the level dimension of the cut semi-finished product section 22, a fourth cut polymer layer section 24 and a fifth cut semi-finished product section 25 whose level dimensions correspond to the surface of the inner overlapping area 38b.

This means that parts of individual bonded fabric layers 4b, 4d, namely areas of the cut semi-finished product sections 22 and 24 and the cut polymer coating sections 42 and 44, protrude beyond an inner overlapping area 38b, as determined by the longitudinally extended area of a plurality of bonded fabric layers 4a, 4c, 4e. These layers can then form a connecting part D and a reinforcement part or rib C as well as base layers A, B. The inner overlapping area 38b, which subsequently forms a connecting part D, is determined by the bonded fabric area, which is supposed to be treated as a whole in the production of the preform. This means that its layers are not separated in subsequent steps for the production of the preform 1. In this area 38b, the semi-finished product layers 22, 23, 24 form inner layers. The protruding areas of the cut polymer coating sections 42 and 44 are arranged between the protruding areas of the cut semi-finished product sections 22 and 24 so that they can rest against each other after being adjacent to each other (Fig. 5b) although they do not have to represent immediately adjacent layers in the starting situation. And again, those sides that do not form outer sides of the preform that is supposed to be produced are placed against each other and bonded with polymer layers.

The second 22 and fourth 24 cut semi-finished product sections can therefore be bonded with each other through the second and third cut polymer coating sections 42 and 44 in a partial area, although both are immediately adjacent only to the third cut semi-finished product section 23 in the stack. On the other hand, the protruding ends of the cut polymer coating sections 42, 44 are shorter than the protruding ends of the cut semi-finished product sections 22, 24 so that the ends of the cut semi-finished product sections 22 and 24 protruding beyond

the overlapping area 38b, as shown in Fig. 5c, can be further formed individually. It is possible, for example, to form - from a level bonded fabric 4 - a preform with a profile where base layers A and B extend on both sides, which can be bonded with a follow- or sub-structure (not shown).

One of many application possibilities includes the production of non-unwindable reinforcement profiles, which are cured on a skin panel. It is also possible to use such preforms as pre-preforms and assemble them with several others into a resulting preform.

Then in a subsequent step, the preform 1 is impregnated with additional polymer and cured. Additional polymer is injected or applied otherwise during the curing process of the preform. This also includes polymer based on the state of the art, e.g. epoxy, polyester, polyimide or polyamide polymers. Any random method based on the state of the art can be employed. In particular, the polymer that is required for this process can be applied with the so-called resin film infusion method (RFI) in the form of the above-mentioned polymer coatings. It is also possible to apply infusion techniques for the infusion of liquid polymer such as resin transfer molding (RTM) or the resin infusion method (RI). The applicability of the respective methods depends on the compatibility of the various polymer systems that are used. If this factor is given, two or more different polymer systems can be used, wherein each epoxy resin system melts at a certain temperature. If polymer systems are used that basically have the same chemical composition, they can be mixed as well so that different polymers can be used in one component.

The polymer that is used for impregnation can be identical to the polymer that is used for the production of the preform P. However, basically it is sufficient if both polymers are chemically compatible, i.e. if they enter into a suitable chemical reaction for the production of the fiber composite component.

The preform that is supposed to be produced can have a geometry that is completely or partially non-unwindable.

Patent Claims

1. Method for producing preforms from fiber composite semi-finished products and polymer so as to use them as components after the curing process

characterized by the fact that

initially on a working surface (60) a bonded fabric is formed by alternately placing layers of cut dry fiber composite semi-finished product sections and polymer layers with a predetermined shape on top of each other,

a specified preform (1) is formed from the bonded fabric (3) by forming the appropriate parts (A, B, C, D) of this fabric and subsequently curing them,

wherein the polymer layers exhibit a shape that ensures a bonding of inner cut semi-finished product sections as well as of the cut semi-finished product sections that form the outer sides of the preform facing each other in the overlapping areas, and wherein the polymer layers contain local recesses in order to minimize shearing stress between the semi-finished product layers in the area of the local recesses when forming the individual profile parts (A, B, C, D) of the bonded fabric.

2. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to claim 1, characterized by the fact that tissue, a multi-axial bonded fabric, interlaced tissue, a mat and/or unidirectional chain-reinforced semi-finished product is used as the dry fiber composite semi-finished product (10).

3. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the polymer layer is applied in the form of a polymer coating (30) together with a carrier foil onto a first overlapping area of a cut semi-finished product section (10) and that the carrier foil is removed after having pressed on the polymer coating.

4. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to claim 1 or 2,

characterized by the fact that the polymer coating (30) is applied to the planned overlapping area of the semi-finished product (10) before cutting the dry semi-finished product and that subsequently the semi-finished product section (10) is cut.

5 .Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the forming process creates extending base layers.

6. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the bonded fabric (3) is placed on a working surface (60) and that the forming process is conducted in a curing tool (70).

7. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the working surface (60) contains a separating foil (61) as carrier for the bonded fabric (3).

8. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the working surface (60) contains a reference device.

9. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the working surface (60) contains a polymer layer in order to set the bonded fabric (3) during its forming process.

10. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that the material of the polymer layer (30) corresponds to the component's polymer.

11. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous

claims, characterized by the fact that the material of the polymer layer (30) is compatible with the component polymer.

12. Method for producing preforms made of fiber composite semi-finished products and polymer consisting of bonded fabric layers of a specified form pursuant to one of the previous claims, characterized by the fact that a preform (1) is composed of a plurality of pre-preforms.

13. Preform made of fiber composite semi-finished products (10), which has been produced with a method pursuant to one of the previous claims.

Abstract

Method for producing preforms from fiber composite semi-finished products and polymer so as to use them as components after the curing process, wherein initially on a working surface (60) a bonded fabric is formed by alternately placing layers of cut dry fiber composite semi-finished product sections and polymer layers with a predetermined shape on top of each other and wherein a specified preform (1) is formed from the bonded fabric (3) by forming the appropriate parts (A, B, C, D) of this fabric and subsequently curing them, wherein the polymer layers exhibit a shape that ensures a bonding of cut semi-finished product sections in their overlapping areas, and wherein the polymer layers contain local recesses in order to minimize shearing stress between the semi-finished product layers in the area of the local recesses when forming the individual profile parts (A, B, C, D) of the bonded fabric, as well as a preform that has been produced pursuant to this method.